FIG.1

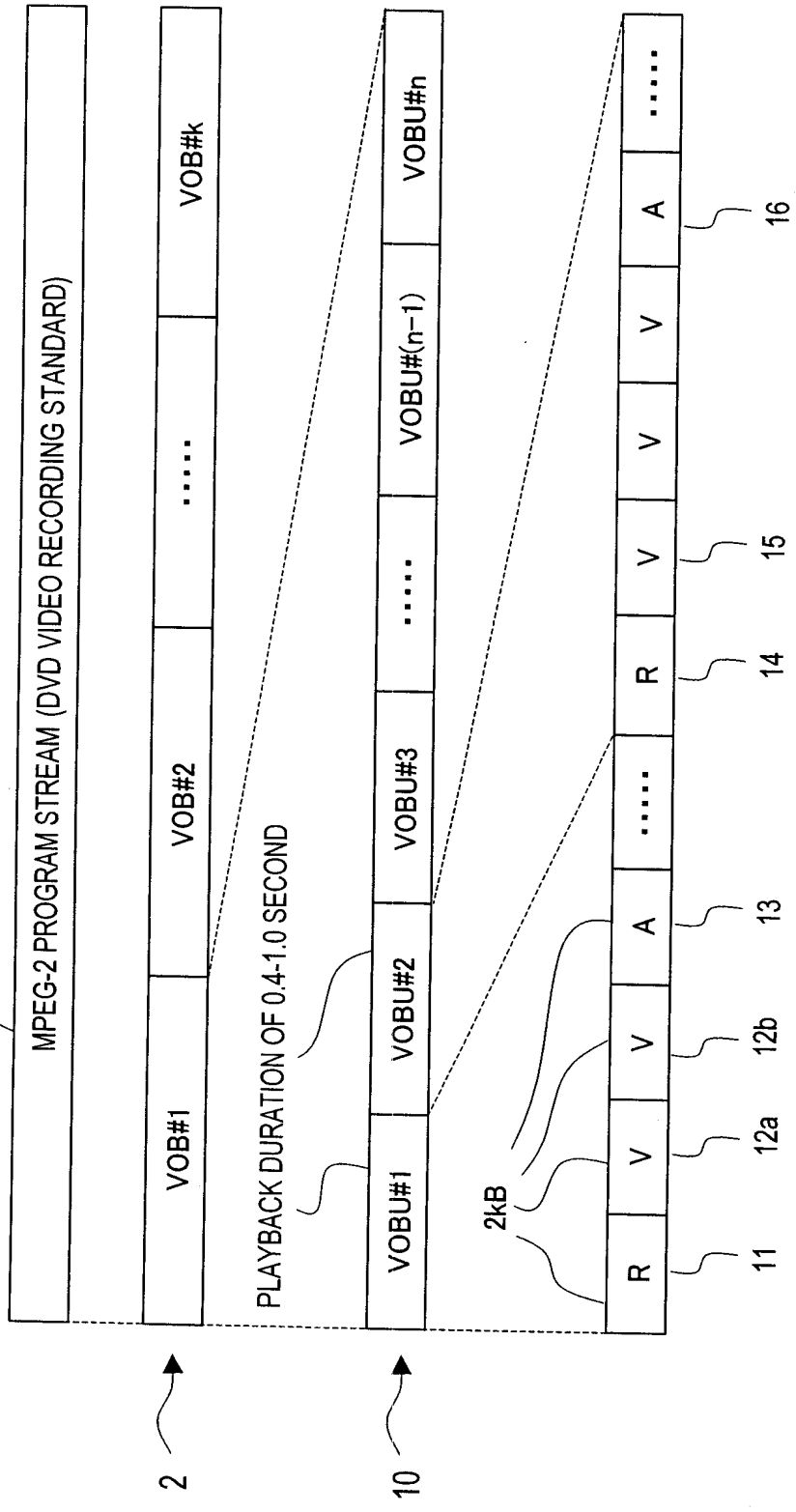
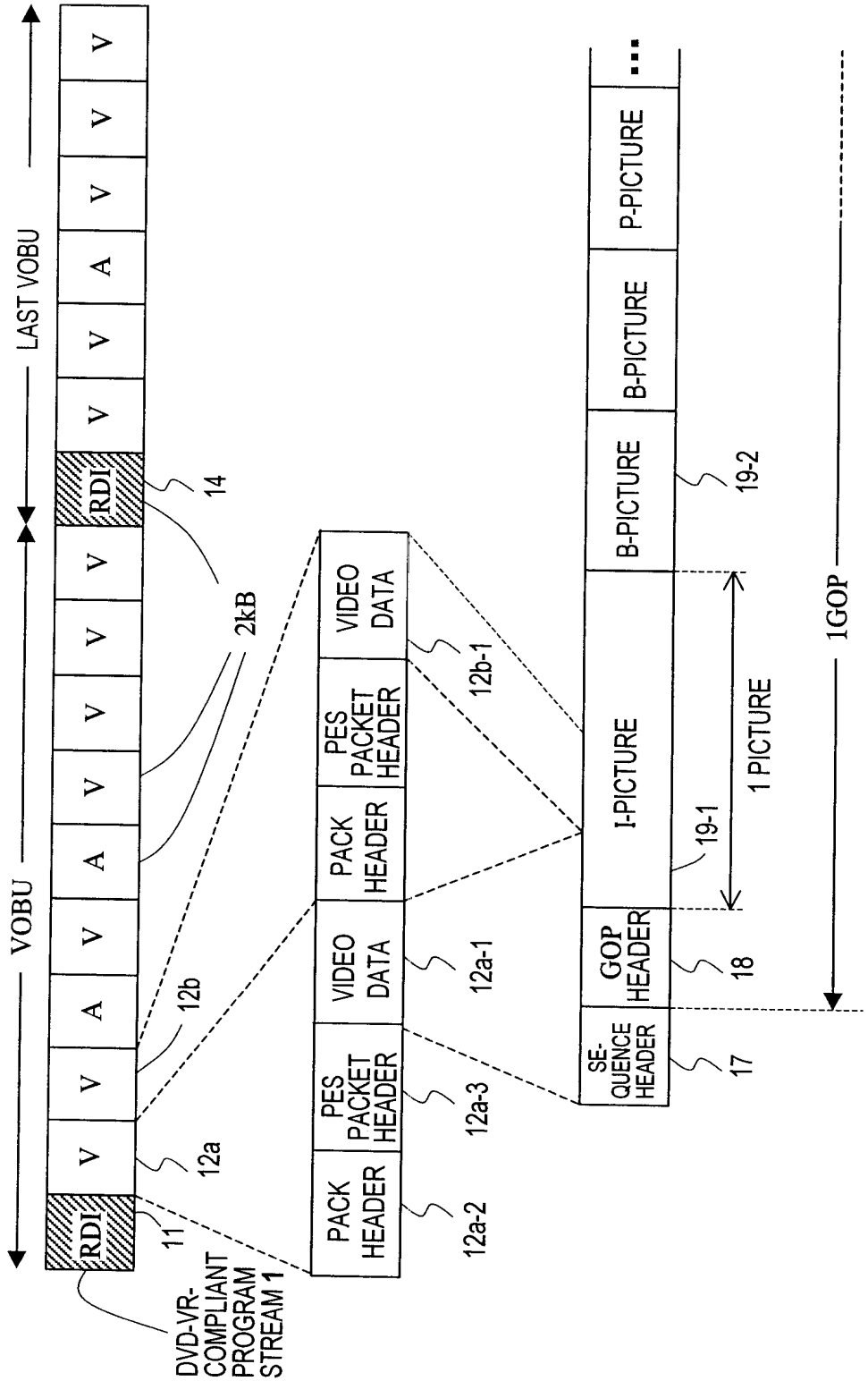

1
MPEG-2 PROGRAM STREAM (DVD VIDEO RECORDING STANDARD)
VOB#1
VOB#2
.....
VOB#k
2
PLAYBACK DURATION OF 0.4-1.0 SECOND
VOBU#1
VOBU#2
VOBU#3
.....
VOBU#(n-1)
VOBU#n
10
2kB
R
V
V
A
.....
R
V
V
V
A
.....
11
12a
12b
13
14
15
16

FIG.2


VOBU
LAST VOBU
RDI
V
A
2kB
14
12b
12a
11
DVD-VR-COMPLIANT PROGRAM STREAM 1
PACK HEADER
PES PACKET HEADER
VIDEO DATA
12a-2
12a-3
12a-1
12b-1
SE-QUENCE HEADER
GOP HEADER
I-PICTURE
B-PICTURE
P-PICTURE
17
18
19-1
19-2
1 PICTURE
1GOP

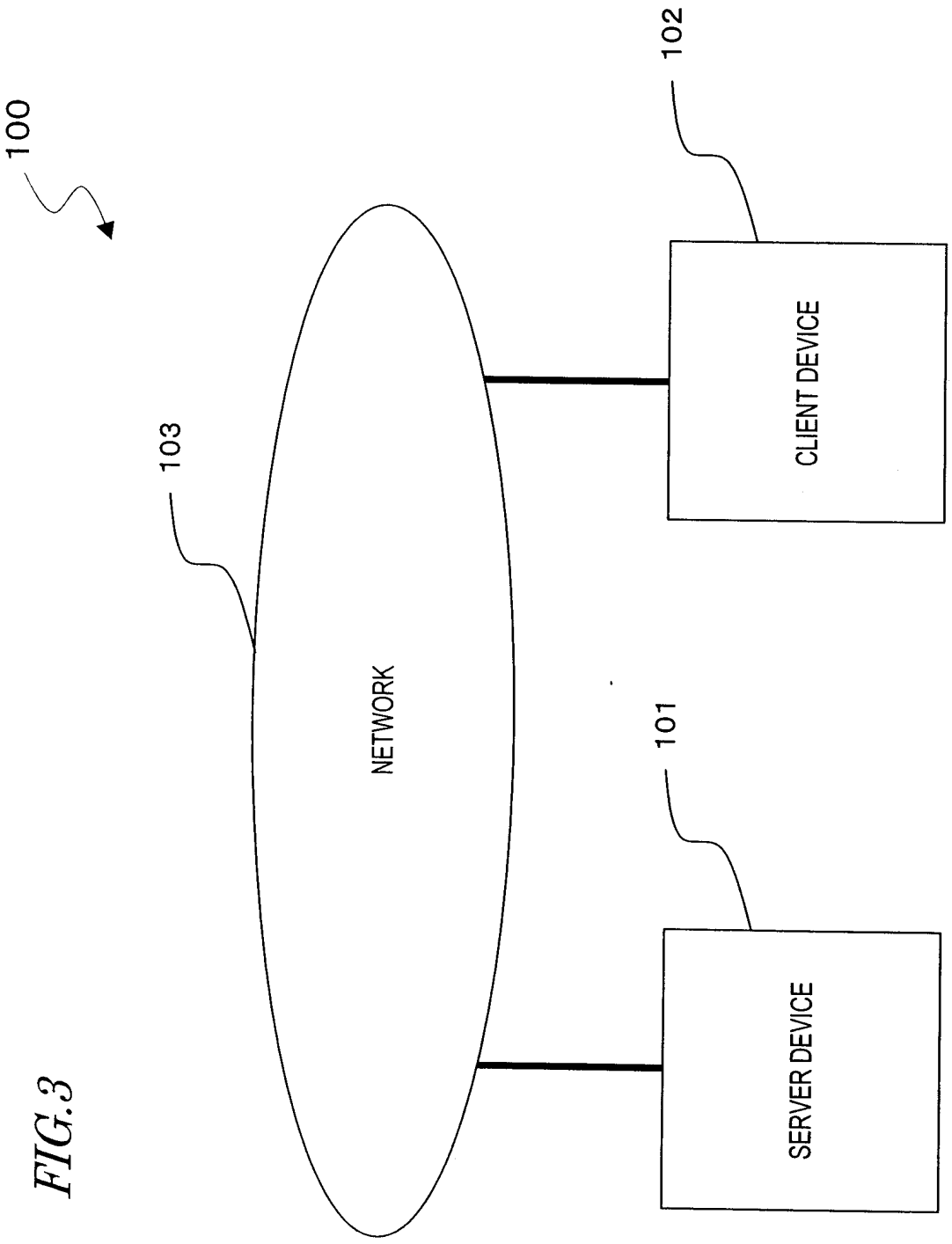


FIG.3

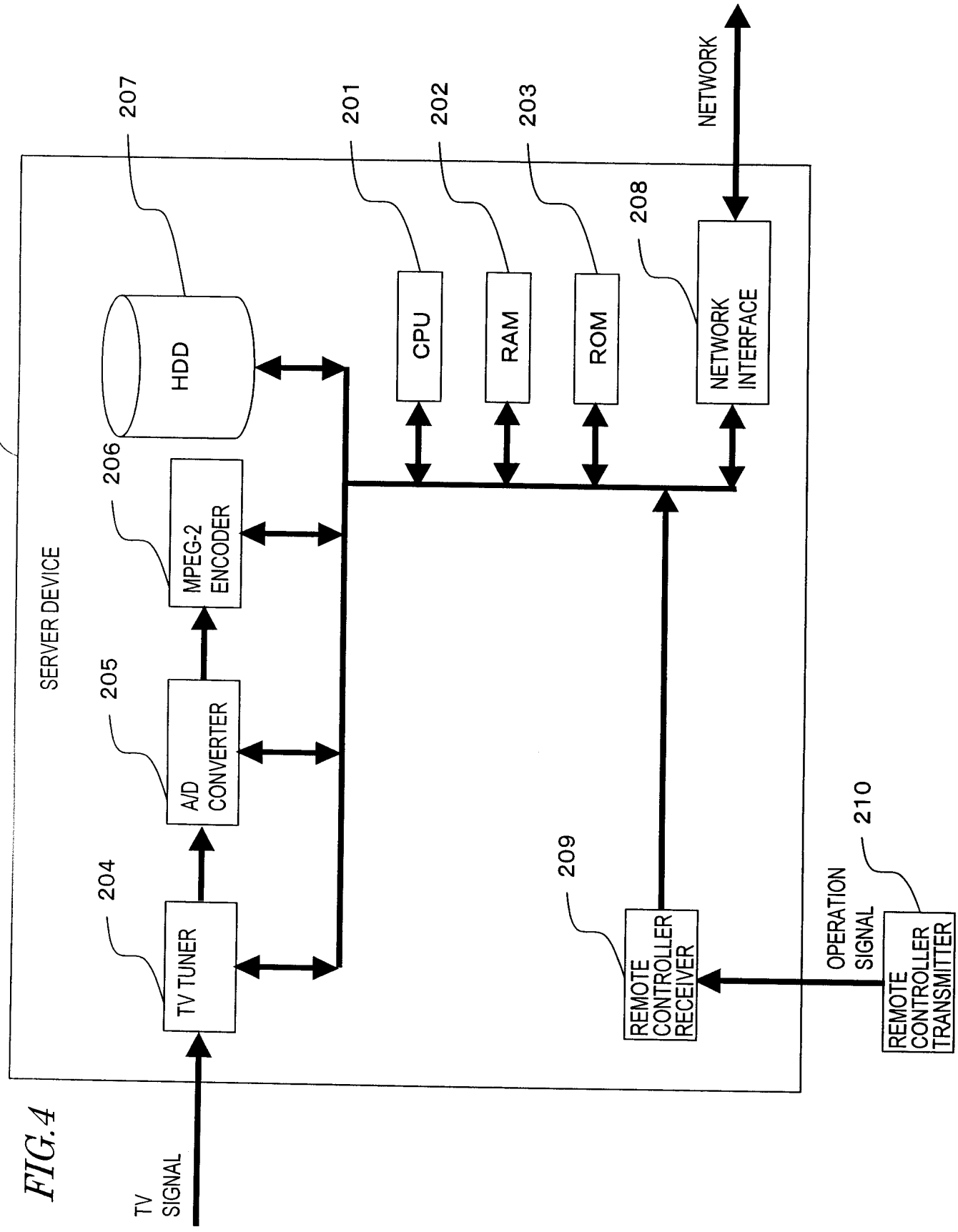

101
SERVER DEVICE
207
HDD
206
MPEG-2 ENCODER
205
A/D CONVERTER
204
TV TUNER
TV SIGNAL
201
CPU
202
RAM
203
ROM
208
NETWORK INTERFACE
NETWORK
209
REMOTE CONTROLLER RECEIVER
OPERATION SIGNAL
210
REMOTE CONTROLLER TRANSMITTER

FIG. 4

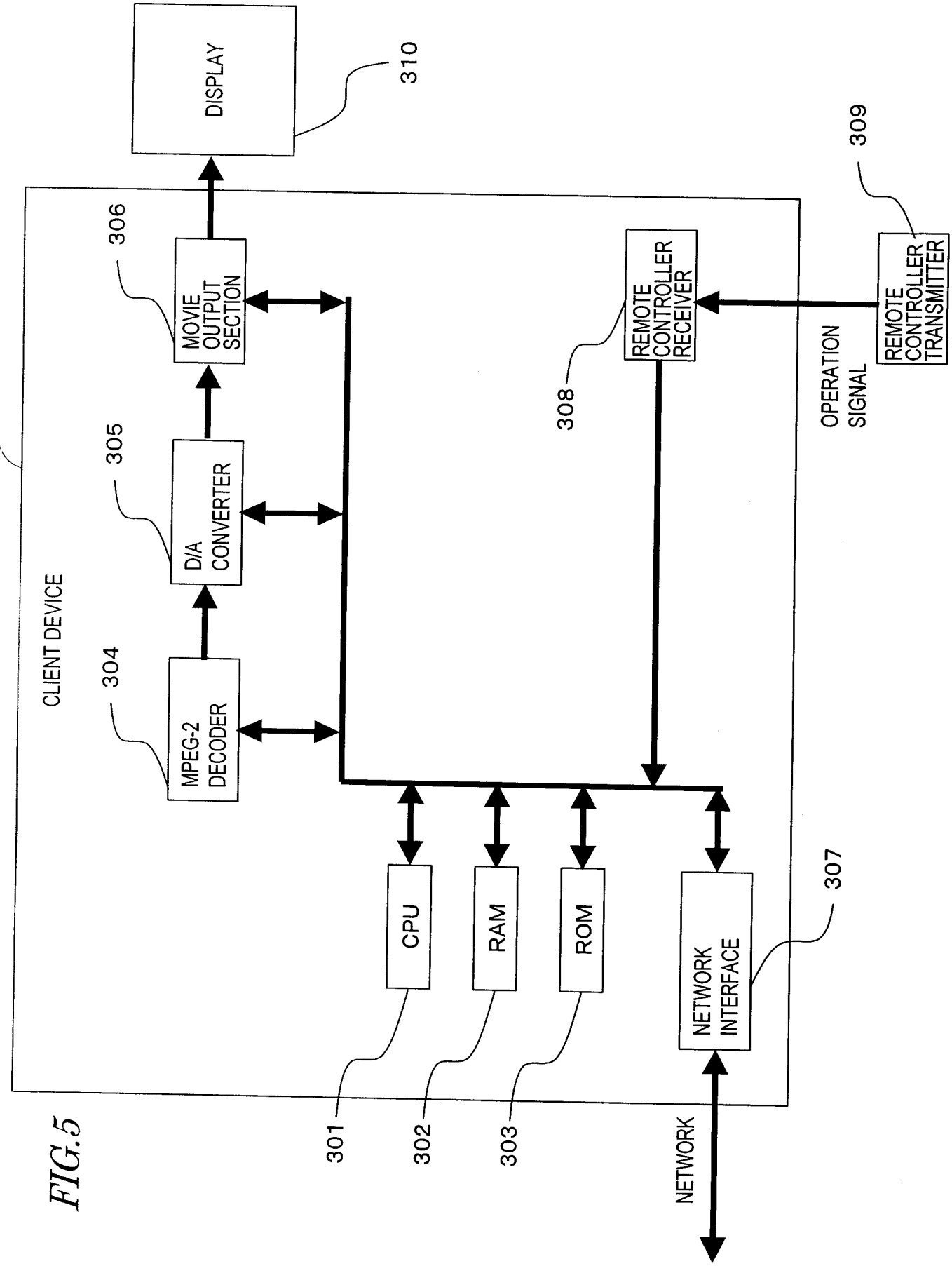

DISPLAY
310
309
306
MOVIE OUTPUT SECTION
REMOTE CONTROLLER RECEIVER
REMOTE CONTROLLER TRANSMITTER
102
305
D/A CONVERTER
308
OPERATION SIGNAL
CLIENT DEVICE
304
MPEG-2 DECODER
CPU
RAM
ROM
NETWORK INTERFACE
307
301
302
303
NETWORK

FIG.5

FIG. 6

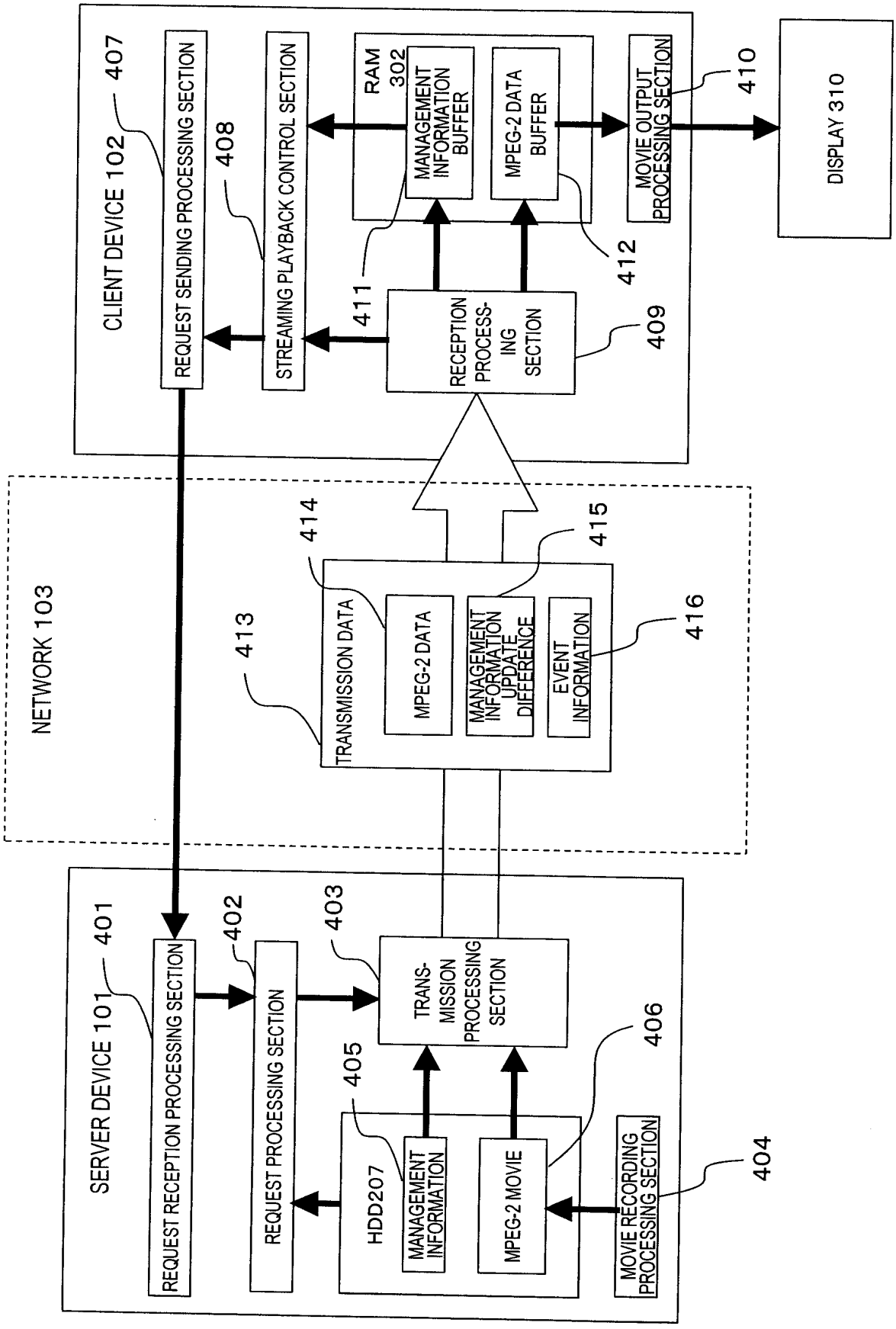
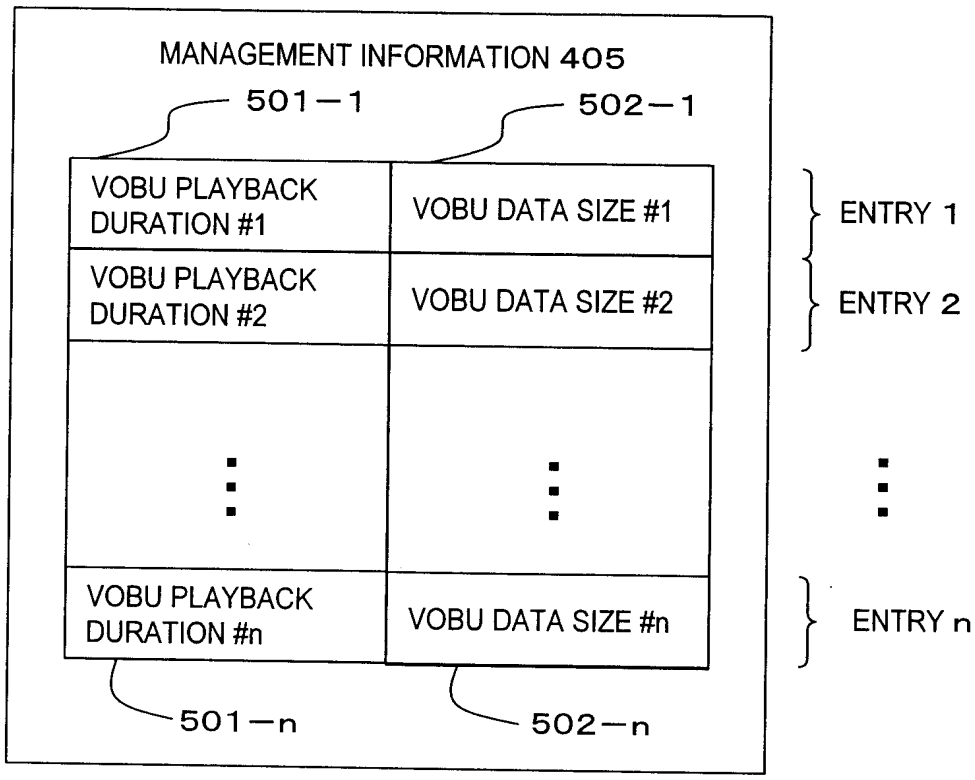

SERVER DEVICE 101
401
REQUEST RECEPTION PROCESSING SECTION
402
REQUEST PROCESSING SECTION
403
TRANS-MISSION PROCESSING SECTION
405
HDD207
MANAGEMENT INFORMATION
MPEG-2 MOVIE
406
MOVIE RECORDING PROCESSING SECTION
404
NETWORK 103
413
TRANSMISSION DATA
414
MPEG-2 DATA
415
MANAGEMENT INFORMATION UPDATE DIFFERENCE
EVENT INFORMATION
416
CLIENT DEVICE 102
407
REQUEST SENDING PROCESSING SECTION
408
STREAMING PLAYBACK CONTROL SECTION
RAM 302
MANAGEMENT INFORMATION BUFFER
MPEG-2 DATA BUFFER
411
412
RECEPTION PROCESS-ING SECTION
409
MOVIE OUTPUT PROCESSING SECTION
410
DISPLAY 310

FIG. 7

(a)


MANAGEMENT INFORMATION 405
501－1
502－1
VOBU PLAYBACK DURATION #1
VOBU DATA SIZE #1
ENTRY 1
VOBU PLAYBACK DURATION #2
VOBU DATA SIZE #2
ENTRY 2
VOBU PLAYBACK DURATION #n
VOBU DATA SIZE #n
ENTRY n
501－n
502－n

(b)

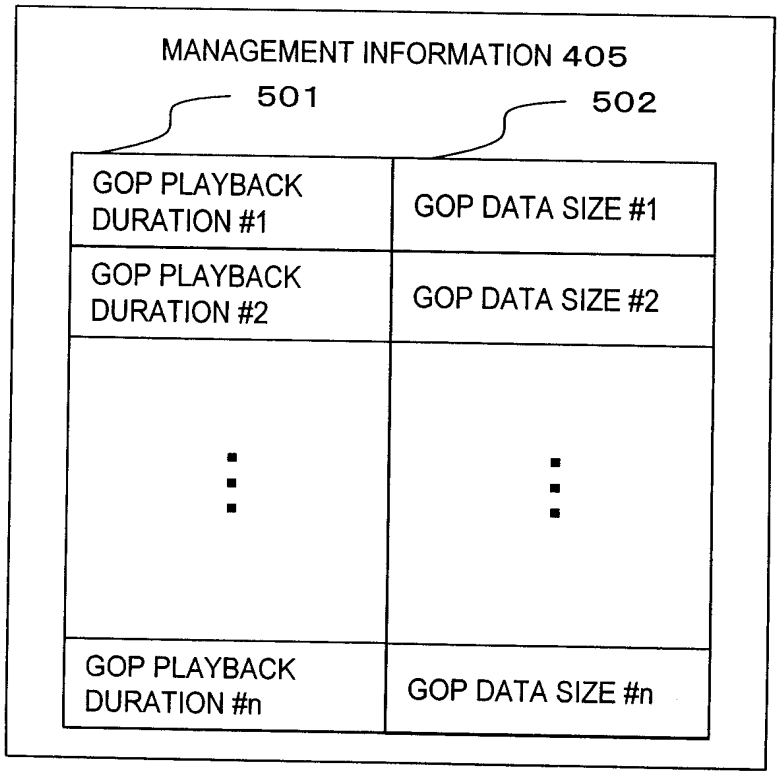

MANAGEMENT INFORMATION 405
501
502
GOP PLAYBACK DURATION #1
GOP DATA SIZE #1
GOP PLAYBACK DURATION #2
GOP DATA SIZE #2
GOP PLAYBACK DURATION #n
GOP DATA SIZE #n

FIG.8

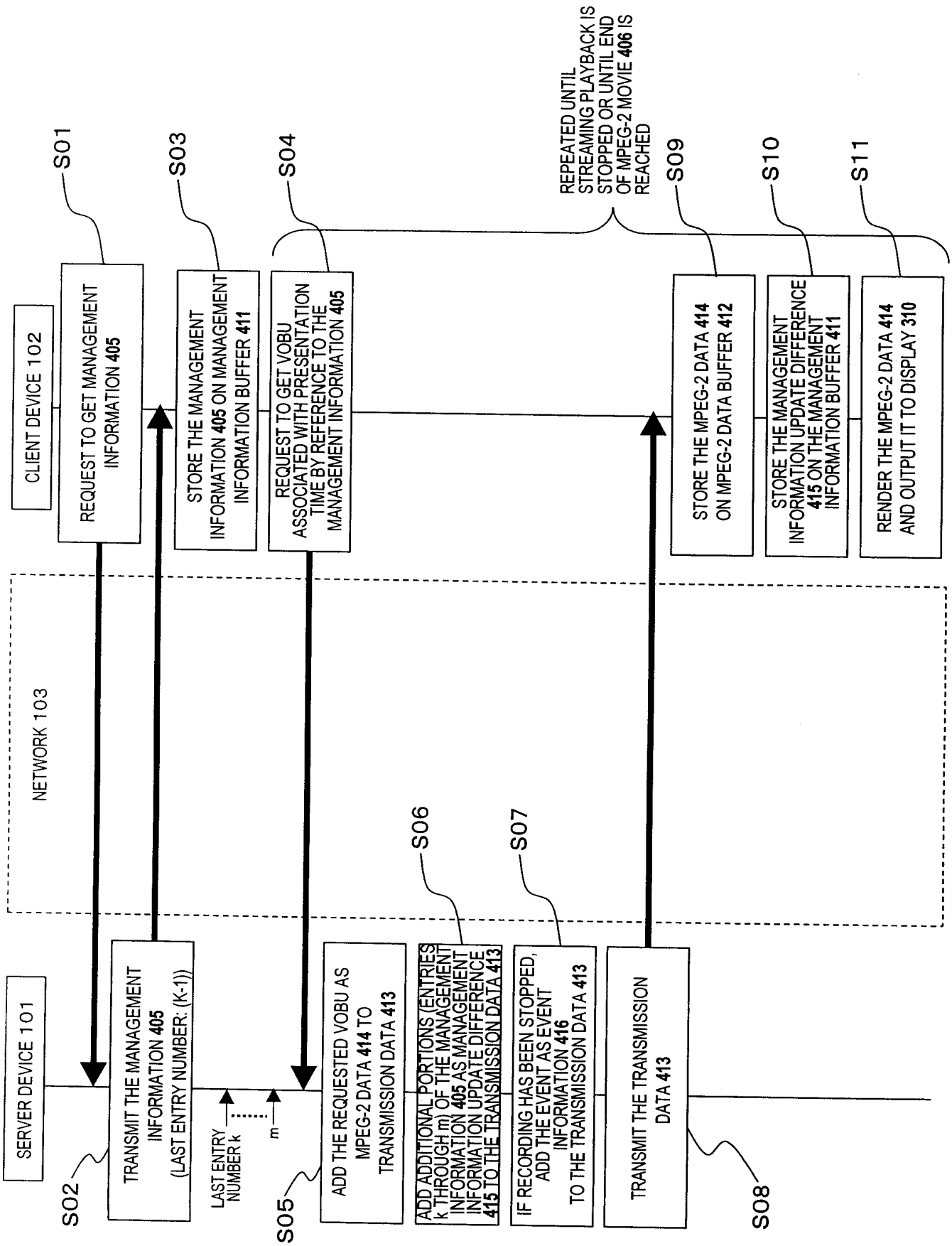

SERVER DEVICE 101
CLIENT DEVICE 102
NETWORK 103
REQUEST TO GET MANAGEMENT INFORMATION 405
TRANSMIT THE MANAGEMENT INFORMATION 405 (LAST ENTRY NUMBER: (K-1))
LAST ENTRY NUMBER k
m
STORE THE MANAGEMENT INFORMATION 405 ON MANAGEMENT INFORMATION BUFFER 411
REQUEST TO GET VOBU ASSOCIATED WITH PRESENTATION TIME BY REFERENCE TO THE MANAGEMENT INFORMATION 405
ADD THE REQUESTED VOBU AS MPEG-2 DATA 414 TO TRANSMISSION DATA 413
ADD ADDITIONAL PORTIONS (ENTRIES k THROUGH m) OF THE MANAGEMENT INFORMATION 405 AS MANAGEMENT INFORMATION UPDATE DIFFERENCE 415 TO THE TRANSMISSION DATA 413
IF RECORDING HAS BEEN STOPPED, ADD THE EVENT AS EVENT INFORMATION 416 TO THE TRANSMISSION DATA 413
TRANSMIT THE TRANSMISSION DATA 413
STORE THE MPEG-2 DATA 414 ON MPEG-2 DATA BUFFER 412
STORE THE MANAGEMENT INFORMATION UPDATE DIFFERENCE 415 ON THE MANAGEMENT INFORMATION BUFFER 411
RENDER THE MPEG-2 DATA 414 AND OUTPUT IT TO DISPLAY 310
REPEATED UNTIL STREAMING PLAYBACK IS STOPPED OR UNTIL END OF MPEG-2 MOVIE 406 IS REACHED
S01
S02
S03
S04
S05
S06
S07
S08
S09
S10
S11

FIG.9

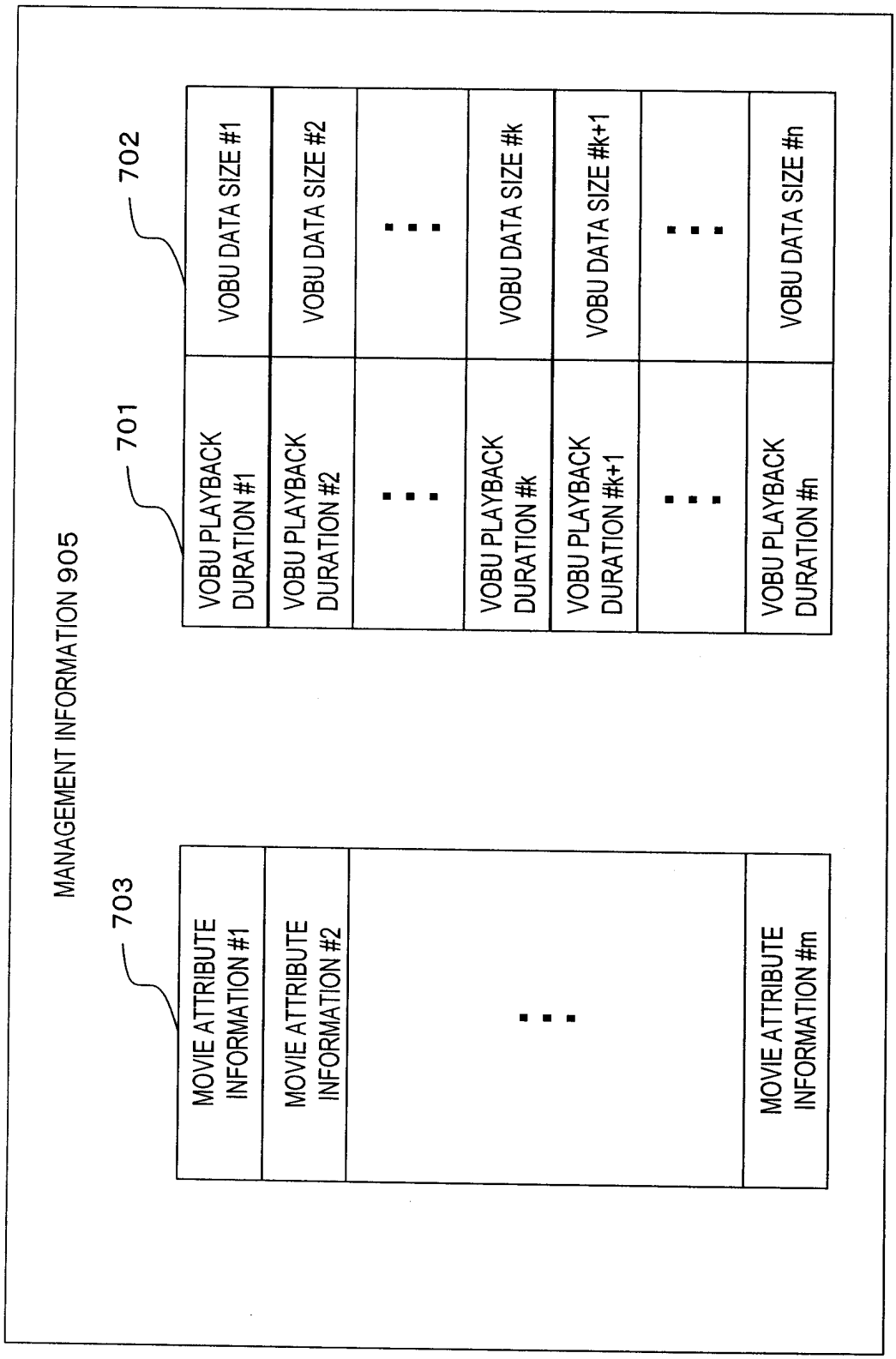

MANAGEMENT INFORMATION 905
701
VOBU PLAYBACK DURATION #1
VOBU PLAYBACK DURATION #2
VOBU PLAYBACK DURATION #k
VOBU PLAYBACK DURATION #k+1
VOBU PLAYBACK DURATION #n
702
VOBU DATA SIZE #1
VOBU DATA SIZE #2
VOBU DATA SIZE #k
VOBU DATA SIZE #k+1
VOBU DATA SIZE #n
703
MOVIE ATTRIBUTE INFORMATION #1
MOVIE ATTRIBUTE INFORMATION #2
MOVIE ATTRIBUTE INFORMATION #m

FIG.10

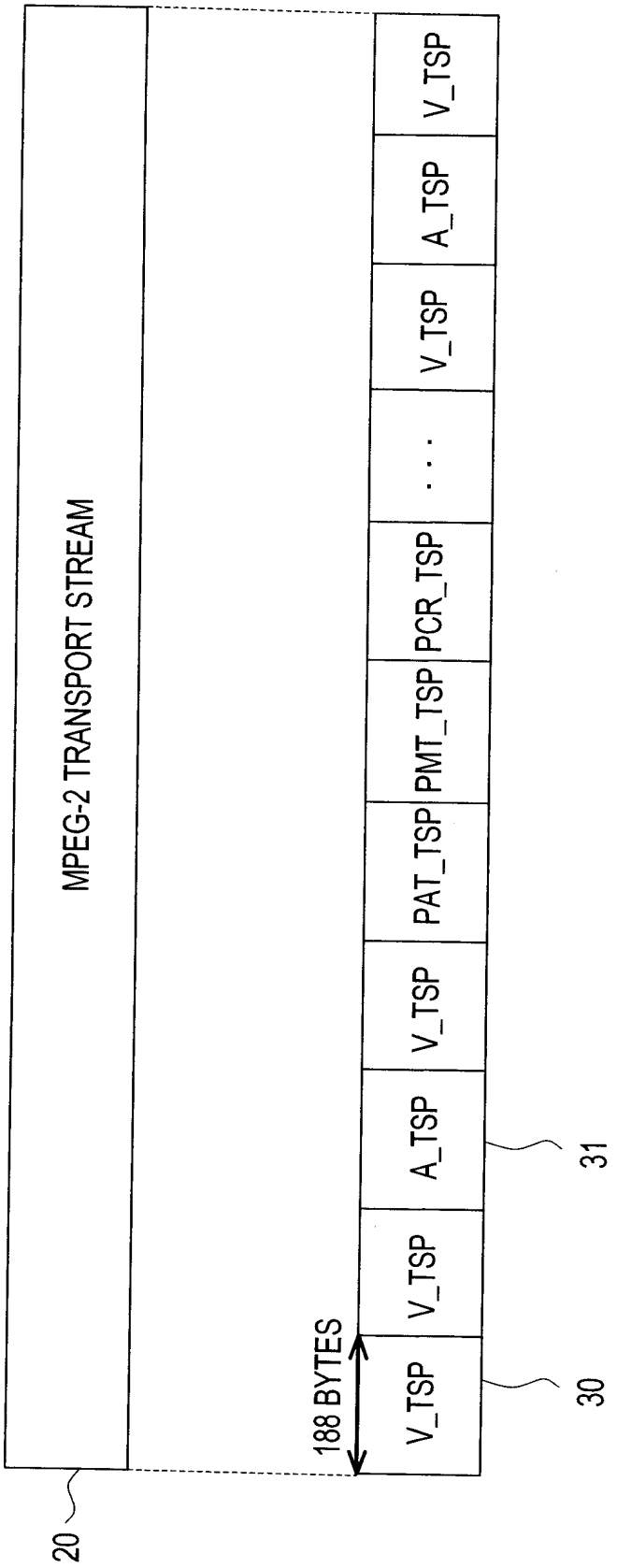

MPEG-2 TRANSPORT STREAM
20
188 BYTES
V_TSP
V_TSP
A_TSP
V_TSP
PAT_TSP
PMT_TSP
PCR_TSP
. . .
V_TSP
A_TSP
V_TSP
30
31

FIG.11

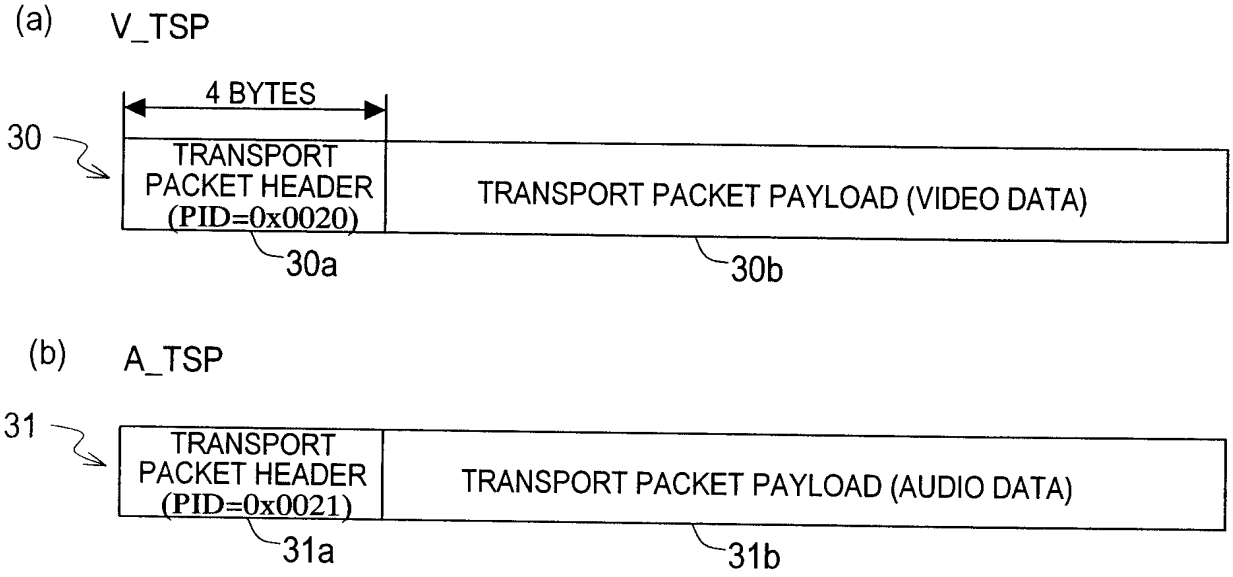

(a) V_TSP
4 BYTES
30
TRANSPORT PACKET HEADER (PID=0x0020)
TRANSPORT PACKET PAYLOAD (VIDEO DATA)
30a
30b
(b) A_TSP
31
TRANSPORT PACKET HEADER (PID=0x0021)
TRANSPORT PACKET PAYLOAD (AUDIO DATA)
31a
31b

FIG. 12

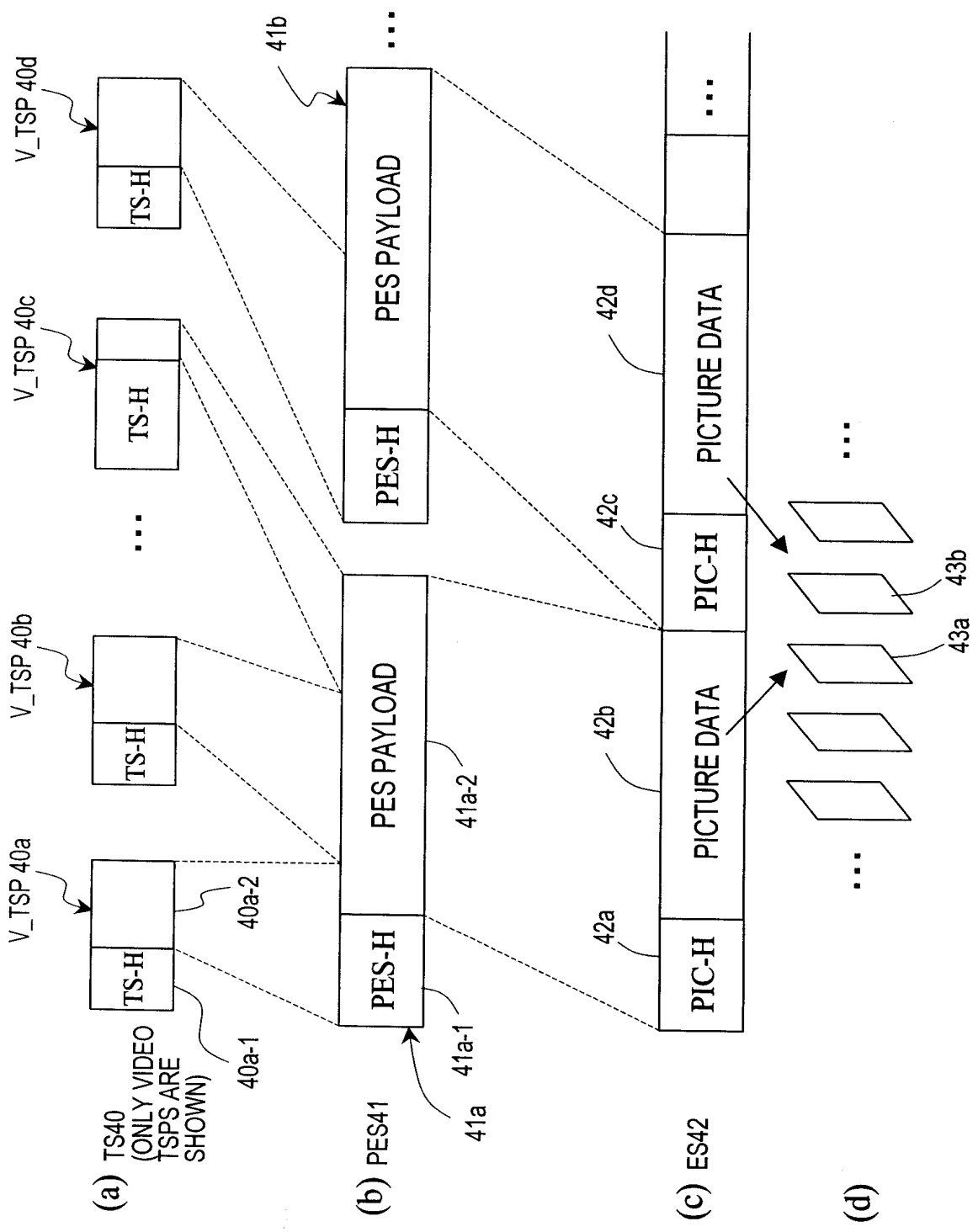

(a) TS40 (ONLY VIDEO TSPS ARE SHOWN)
V_TSP 40a
V_TSP 40b
V_TSP 40c
V_TSP 40d
TS-H
40a-1
40a-2
(b) PES41
PES-H
PES PAYLOAD
41a
41a-1
41a-2
41b
(c) ES42
PIC-H
PICTURE DATA
42a
42b
42c
42d
(d)
43a
43b

FIG. 13

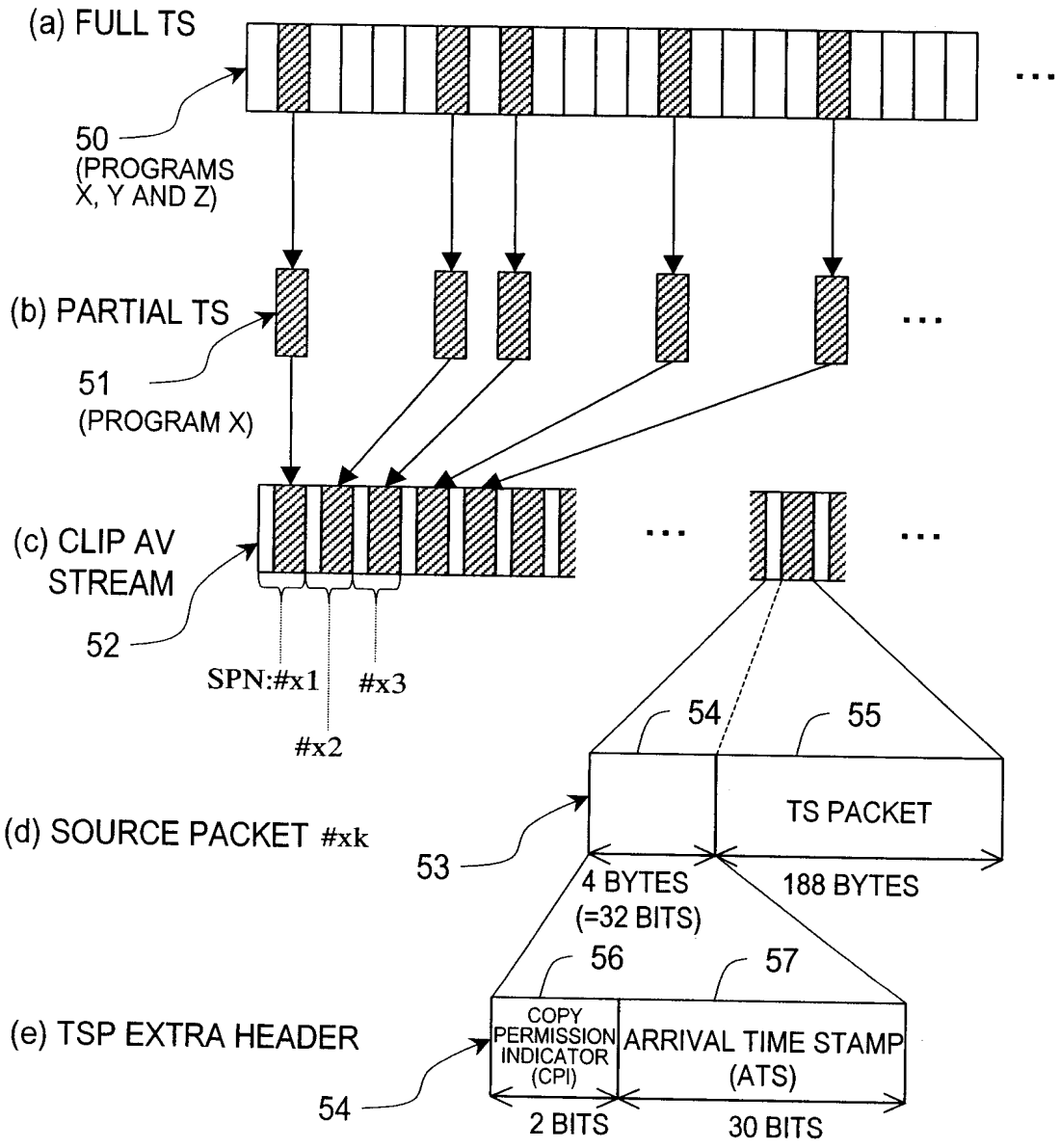

(a) FULL TS
50
(PROGRAMS X, Y AND Z)
(b) PARTIAL TS
51
(PROGRAM X)
(c) CLIP AV STREAM
52
SPN:#x1
#x2
#x3
(d) SOURCE PACKET #xk
53
54
55
TS PACKET
4 BYTES (=32 BITS)
188 BYTES
(e) TSP EXTRA HEADER
54
56
57
COPY PERMISSION INDICATOR (CPI)
ARRIVAL TIME STAMP (ATS)
2 BITS
30 BITS

FIG.14

PRESENTATION TIME	SOURCE PACKET NUMBER	
PTS (x1)	x1	ENTRY 1
PTS (x2)	x2	ENTRY 2
PTS (x3)	x3	ENTRY 3
.....	.....	.....
PTS (xk)	xk	ENTRY k

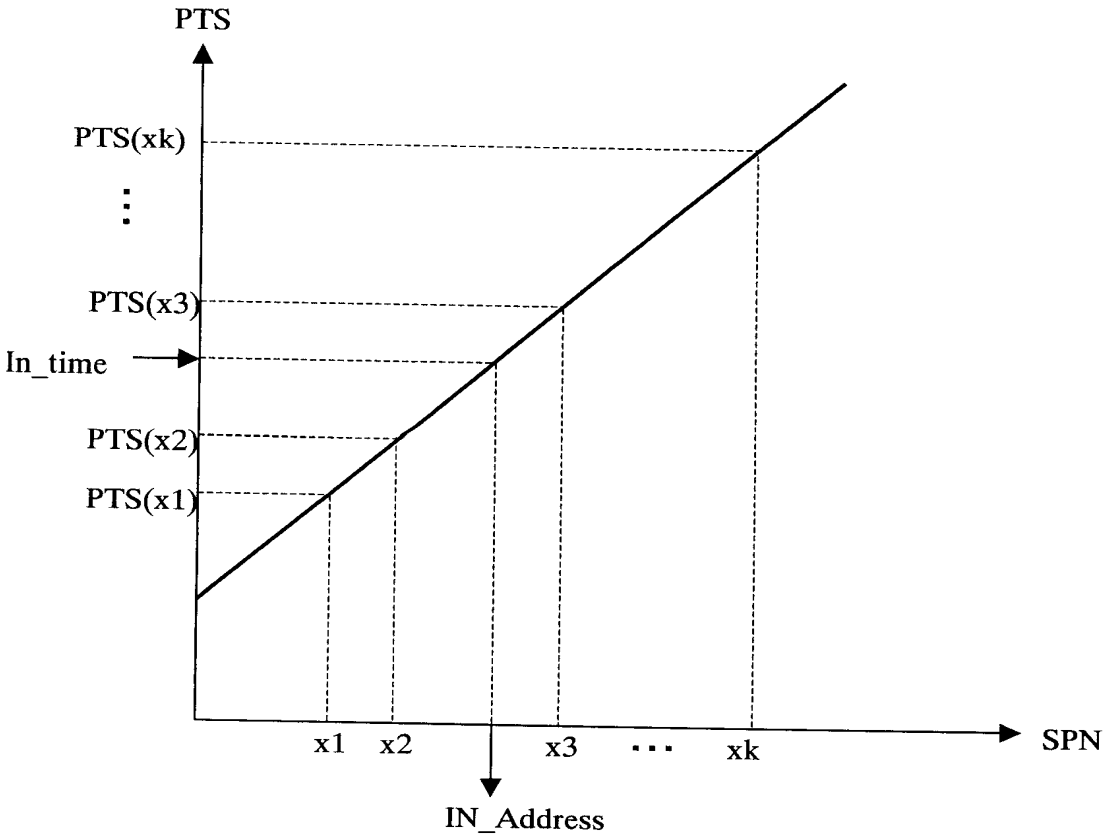



FIG.15